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OFFICE OF PREVENTION,
PESTICIDES AND TOXIC
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MEMORANDUM

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SUBJECT: Drinking Water Assessment for diuron and its degradates

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CONCLUSIONS

The memorandum transmits the estimated drinking water concentrations for use in the human health risk assessment. Griffin Label (EPA Reg. No. 1812-362) was used to determine the estimated concentrations.

The Tier II screening models PRZM¹ and EXAMS² with the Index

Reservoir and Percent Crop Area adjustment was used to determine estimated surface water concentrations of diuron and its degradates dichlorophenylmethylurea (DCPMU); dichlorophenylurea (DCPU); 3,4-dichloraniline (3,4-DCA); and N'-(3-chlorophenyl)-N-N-dimethylurea (mCPDMU). The Screening Concentration in Groundwater (SCI-GROW³) model was used to estimate groundwater concentrations for Diuron and its degradates. Modeling results are shown in Table 1.

Table 1. Estimated environmental concentrations in surface and groundwater for diuron and its degradates use on citrus.

Toxicity end point	model EECs (Fg/L)					use(s) modeled	PCA
	Diuron	DCPMU	DCPU	3,4-DCA	mCPDMU		
Surface water/ peak	1083	48.2	1.91	0.05	58.9	one application of diuron on citrus @ 9.6 lb ai/acre, ground application	Default (0.87)
Surface water/ 1-10-year average)	251	8.44	0.33	0.003	13.5		
Surface water/ mean of annual values)	146	5.98	0.24	0.002	9.22		
Groundwater/ (peak and long-term average)	6.52	2.50	0.09	2X10 ⁻⁴	0.30		

The IR-PCA modeling results indicate that diuron and its degradates have the potential to contaminate surface waters by runoff in areas with large amounts of annual rainfall. The degrdate 3,4-DCA is commonly seen in surface water in areas with high diuron and propanil usage, however, EFED has received no guideline studies on the environmental fate and transport of 3,4-DCA or other degrdate of diuron. EFED believes that additional studies are needed to fully understand both the fate and transport of these compounds in the environment.

Modeling results were higher EECs than data from existing diuron surface water monitoring data targeted to the pesticide use area. Modeling values where several magnitude (ranging from 9-100 times) higher than monitoring data.

Major degradates that were determined by HED to be of toxicological concern include: dichlorophenylmethylurea (DCPMU),

dichlorophenylurea (DCPU), 3,4-dichloroaniline (3,4-DCA), and N'-(3-chlorophenyl)-N-N-dimethylurea (mCPDMU)]. Because the EFED lacks complete environmental fate data (such as the aerobic aquatic and anaerobic aquatic studies) on any of these degradates, this memorandum addresses the estimated environmental concentrations (EEC's) for surface and groundwater based on half-lives that were calculated on cumulative residues.

Usage map for diuron⁴ is attached.

Surface Water

Monitoring

The EFED has targeted, but, limited monitoring data on the concentrations of diuron and its degradates in surface water.

A study on the occurrence of cotton herbicides and insecticides in Playa lakes of the high plains of western Texas concluded that diuron was the major pesticide detected in water samples collected from 32 lakes with a mean concentration of 2.7 ppb. Diuron metabolites (DCPMU, DCPU, and 3,4-DCA) were found in 71% of the samples analyzed. The mean concentrations of these metabolites were 0.45 ppb for DCPMU, 0.31 ppb for 3,4-DCA, and 0.2 ppb for DCPU⁵. In this study, water samples were taken within two days after diuron application to cotton in the region. Diuron usage on cotton in this part of the state reached an average of \$1379 lb ai/mile²/yr. Even though, the monitoring of diuron concentrations from use on Cotton in this part of the state is an example of targeted study, the frequency of surface water sampling and the length of sampling period were insufficient to satisfy the temporal and spatial requirements for regulatory purposes. This study has limited use in a national assessment because we do not expect western Texas to be one of the most vulnerable use areas for runoff. However, because the samples were taken within two days after application, the results may represent a lower bound of possible peak concentrations that could occur in drinking water in that area.

The US Geological Survey (USGS) National Water Quality Assessment Program (NAWQA) collected 1420 surface water samples

from 62 agricultural stream sites during the period from 1992-1998.

One to two samples was collected each month during periods when pesticide transport in the streams was expected to be low throughout the year. At most sites, the sampling frequency was increased to 1 to 3 samples per week during periods when elevated levels of pesticides were expected in the streams. Diuron was detected in 7.32% of the samples (detection limit = 0.05 ppb) with concentration of 0.13 ppb in 95% of samples. Diuron maximum concentration was 13 ppb (estimated concentration)⁶.

Modeling

Tier II surface water modeling was done using the Index Reservoir (IR) and Percent Crop Area (PCA) modifications to PRZM and EXAMS.

The index reservoir represents a potential vulnerable drinking water source from a specific area (Illinois) with specific cropping patterns, weather, soils, and other factors.

The PCA is a generic watershed-based adjustment factor which represent the portion of a watershed planted to a crop or crops and will be applied to pesticide concentrations estimated for the surface water component of the drinking water exposure assessment using PRZM/EXAMS with the index reservoir scenario⁷.

The IR-PCA PRZM/EXAMS model use and fate input parameters for diuron and its degradates in surface water are shown in Tables 2-6. The IR-PC PRZM/EXAMS model input and output files for diuron and its degradates are shown in Appendix I.

Table 2: IR-PC PRZM/EXAMS input parameters for diuron.

Input variable	Input value & calculations	Source/Quality of data
Crop name	citrus	label (EPA Reg. No. 1812-362).
application rate (lb ai/acre)	9.6	label (EPA Reg. No. 1812-362).
Application efficiency	0.99	IR-PC Guidance ⁷
Spray drift fraction	0.064	IR-PC Guidance
Application method	ground	label (EPA Reg. No. 1812-362).
DWRATE (day ⁻¹)	0.002	MRID#41719303; Input parameters guidance ⁸
DSRATE (day ⁻¹)	0.002	MRID#41719303; Input parameters guidance
K _d (mL/g)	14	MRID# 44490501; Input parameters guidance
Henry (atm.m ³ /mole)	2.2X10 ⁻¹⁰ (calculated)	Product Chemistry chapter for HED RED, 2001.
KBACW (h ⁻¹)	7.6X10 ⁻⁵	No aerobic aquatic data is available, the aerobic soil met. t % was multiplied by 0.5. MRID#41719303. Input parameters guidance.
KBACS (h ⁻¹)	5.8X10 ⁻⁵	No anaerobic aquatic data is available, the anaerobic soil met. t % was multiplied by 0.5. MRID#41418806. Input parameters guidance.
KDP (h ⁻¹)	6.7X10 ⁻⁴	MRID#41418805; Input parameters guidance.
KBH, KNH, KAH (h ⁻¹)	0 (stable)	MRID# 41418804.

KPS (mL/g)	14	MRID# 44490501; Input parameters guidance.
MWT (g/mole)	233.1	The MERCK INDEX ⁹
Solubility @ 25 °C (ppm)	420	Product Chemistry chapter for HED RED, 2001; Input parameters guidance.
Vapor pressure (torr)	2.0X10 ⁻⁷	Product Chemistry chapter for HED RED, 2001.

Table 3: IR-PC PRZM/EXAMS input parameters for DCPMU.

Input variable	Input value & calculations	Source/Quality of data
Crop name	citrus	label (EPA Reg. No. 1812-362).
application rate (lb ai/acre)	2.03	label (EPA Reg. No. 1812-362). An equivalent value based on maximum conversion of diuron to degradates and the molecular weight ratio adjustment.
Application efficiency	0.99	IR-PC Guidance ⁷
Spray drift fraction	0.064	IR-PC Guidance
Application method	ground	label (EPA Reg. No. 1812-362).
DWRATE (day ⁻¹)	0.009	MRID#41719303; Input parameters guidance ⁸
DSRATE (day ⁻¹)	0.009	MRID#41719303; Input parameters guidance
K _d (mL/g)	for diuron: 14	MRID# 44490501; Input parameters guidance
Henry (atm.m ³ /mole)	for diuron: 2.2X10 ⁻¹⁰ (calculated)	Product Chemistry chapter for HED RED, 2001.
KBACW (h ⁻¹)	for diuron: 0.0003	No aerobic aquatic data is available, diuron- t % was multiplied by 3, MRID#41719303. Input parameters guidance.
KBACS (h ⁻¹)	for diuron: 0.002	No anaerobic aquatic data is available, the anaerobic soil met. t % was multiplied by 0.5. MRID#41418806. Input parameters guidance.
KDP (h ⁻¹)	for diuron: 0.0007	MRID#41418805; Input parameters guidance.
KBH, KNH, KAH (h ⁻¹)	for diuron: 0 (stable)	MRID# 41418804.
KPS (mL/g)	for diuron: 14	MRID# 44490501; Input parameters guidance.
MWT (g/mole)	233.1	The MERCK INDEX ⁹
Solubility @ 25 °C (ppm)	for diuron: 420	Product Chemistry chapter for HED RED, 2001; Input parameters guidance.

vapor pressure (torr)	for diuron: 2.0×10^{-7}	Product Chemistry chapter for HED RED, 2001.
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Table 4: IR-PC PRZM/EXAMS input parameters for DCPU.

Input variable	Input value & calculations	Source/Quality of data
Crop name	citrus	label (EPA Reg. No. 1812-362).
application rate (lb ai/acre)	0.08	label (EPA Reg. No. 1812-362). An equivalent value based on maximum conversion of diuron to degradates and the molecular weight ratio adjustment.
Application efficiency	0.99	IR-PC Guidance ⁷
Spray drift fraction	0.064	IR-PC Guidance
Application method	ground	label (EPA Reg. No. 1812-362).
DWRATE (day ⁻¹)	0.009	MRID#41719303; Input parameters guidance ⁸
DSRATE (day ⁻¹)	0.009	MRID#41719303; Input parameters guidance
K _d (mL/g)	for diuron: 14	MRID# 44490501; Input parameters guidance
Henry (atm.m ³ /mole)	for diuron: 2.2×10^{-10} (calculated)	Product Chemistry chapter for HED RED, 2001.
KBACW (h ⁻¹)	for diuron: 0.0003	No aerobic aquatic data is available, diuron- t _{1/2} was multiplied by 3, MRID#41719303. Input parameters guidance.
KBACS (h ⁻¹)	for diuron: 0.002	No anaerobic aquatic data is available, the anaerobic soil met. t _{1/2} was multiplied by 0.5. MRID#41418806. Input parameters guidance.
KDP (h ⁻¹)	for diuron: 0.0007	MRID#41418805; Input parameters guidance.
KBH, KNH, KAH (h ⁻¹)	for diuron: 0 (stable)	MRID# 41418804.

KPS (mL/g)	for diuron: 14	MRID# 44490501; Input parameters guidance.
MWT (g/mole)	205.1	The MERCK INDEX ⁹
Solubility @ 25 °C (ppm)	for diuron: 420	Product Chemistry chapter for HED RED, 2001; Input parameters guidance.
Vapor pressure (torr)	for diuron: 2.0X10 ⁻⁷	Product Chemistry chapter for HED RED, 2001.

Table 5: IR-PC PRZM/EXAMS input parameters for 3,4-DCA.

Input variable	Input value & calculations	Source/Quality of data
Crop name	citrus	label (EPA Reg. No. 1812-362).
application rate (lb ai/acre)	0.0021	label (EPA Reg. No. 1812-362). An equivalent value based on maximum conversion of diuron to degradates and the molecular weight ratio adjustment.
Application efficiency	0.99	IR-PC Guidance ⁷
Spray drift fraction	0.064	IR-PC Guidance
Application method	ground	label (EPA Reg. No. 1812-362).
DWRATE (day ⁻¹)	0.008	MRID#41719303; Input parameters guidance ⁸
DSRATE (day ⁻¹)	0.008	MRID#41538701; Input parameters guidance
K _d (mL/g)	for diuron: 14	MRID# 44490501; Input parameters guidance
Henry (atm.m ³ /mole)	for diuron: 2.2X10 ⁻¹⁰ (calculated)	Product Chemistry chapter for HED RED, 2001.
KBACW (h ⁻¹)	for diuron: 0.0003	No aerobic aquatic data is available, diuron- t _½ was multiplied by 3, MRID#41719303. Input parameters guidance.
KBACS (h ⁻¹)	for diuron: 0.002	No anaerobic aquatic data is available, the anaerobic soil met. t _½ was multiplied by 0.5. MRID#41418806. Input parameters guidance.

KDP (h ⁻¹)	for diuron: 0.0007	MRID#41418805; Input parameters guidance.
KBH, KNH, KAH (h ⁻¹)	for diuron: 0 (stable)	MRID# 41418804.
KPS (mL/g)	for diuron: 14	MRID# 44490501; Input parameters guidance.
MWT (g/mole)	162.1	The MERCK INDEX ⁹
Solubility @ 25 °C (ppm)	for diuron: 420	Product Chemistry chapter for HED RED, 2001; Input parameters guidance.
Vapor pressure (torr)	for diuron: 2.0X10 ⁻⁷	Product Chemistry chapter for HED RED, 2001.

Table 6: IR-PC PRZM/EXAMS input parameters for mPDMU.

Input variable	Input value & calculations	Source/Quality of data
Crop name	citrus	label (EPA Reg. No. 1812-362).
application rate (lb ai/acre)	2.04	label (EPA Reg. No. 1812-362). An equivalent value based on maximum conversion of diuron to degradates and the molecular weight ratio adjustment.
Application efficiency	0.99	IR-PC Guidance ⁷
Spray drift fraction	0.064	IR-PC Guidance
Application method	ground	label (EPA Reg. No. 1812-362).
DWRATE (day ⁻¹)	for diuron: 0.002	MRID#41719303; Input parameters guidance ⁸
DSRATE (day ⁻¹)	for diuron: 0.002	MRID#41719303; Input parameters guidance
K _d (mL/g)	for diuron: 14	MRID# 44490501; Input parameters guidance
Henry (atm.m ³ /mole)	for diuron: 2.2X10 ⁻¹⁰ (calculated)	Product Chemistry chapter for HED RED, 2001.
KBACW (h ⁻¹)	0.00008	MRID# 42661901. Input parameters guidance.

KBACS (h ⁻¹)	0.00005	MRID# 42260501. Input parameters guidance.
KDP (h ⁻¹)	for diuron: 0.0007	MRID#41418805; Input parameters guidance.
KBH, KNH, KAH (h ⁻¹)	for diuron: 0 (stable)	MRID# 41418804.
KPS (mL/g)	for diuron: 14	MRID# 44490501; Input parameters guidance.
MWT (g/mole)	233.1	The MERCK INDEX ⁹
Solubility @ 25 °C (ppm)	for diuron: 420	Product Chemistry chapter for HED RED, 2001; Input parameters guidance.
Vapor pressure (torr)	for diuron: 2.0x10 ⁻⁷	Product Chemistry chapter for HED RED, 2001.

Assumptions and Uncertainties^{7,10}

Index Reservoir

The index reservoir represents potential drinking water exposure from a specific area (Illinois) with specific cropping patterns, weather, soils, and other factors. Use of the index reservoir for areas with different climates, crops, pesticides used, sources of water (e.g. rivers instead of reservoirs, etc), and hydrogeology creates uncertainties. In general, because the index reservoir represents a fairly vulnerable watershed, the exposure estimated with the index reservoir will likely be higher than the actual exposure for most drinking water sources. However, the index reservoir is not a worst case scenario, communities that derive their drinking water from smaller bodies of water with minimal outflow, or with more runoff prone soils would likely get higher drinking water exposure than estimated using the index reservoir. Areas with a more humid climate that use a similar reservoir and cropping patterns may also get more pesticides in their drinking water than predicted using this scenario.

A single steady flow has been used to represent the flow through the reservoir. Discharge from the reservoir also removes chemical so this assumption will underestimate removal from the

reservoir during wet periods and overestimates removal during dry periods. This assumption can both underestimate or overestimate the concentration in the pond depending upon the annual precipitation pattern at the site.

The index reservoir scenario uses the characteristics of a single soil to represent the soil in the basin. In fact, soils can vary substantially across even small areas, and this variation is not reflected in these simulations.

The index reservoir scenario does not consider tile drainage. Areas that are prone to substantial runoff are often tile drained. Tile drainage contributes additional water and in some cases, additional pesticide loading to the reservoir. This may cause either an increase or decrease in the pesticide concentration in the reservoir. Tile drainage also causes the surface soil to dry out faster. This will reduce runoff of the pesticide into the reservoir. The watershed used as the model for the index reservoir (Shipman City Lake) does not have tile drainage in the cropped areas.

EXAMS is unable to easily model spring and fall turnover. Turnover occurs when the temperature drops in the fall and the thermal stratification of the reservoir is removed. Turnover occurs again in the spring when the reservoir warms up. This results in complete mixing of the chemical through the water column at these times. Because of this inability, the Index Reservoir has been simulated without stratification. There is data to suggest that Shipman City Lake, upon which the Index Reservoir is based, does indeed stratify in the deepest parts of the lake at least in some years. This may result in both over and underestimation of the concentration in drinking water depending upon the time of the year and the depth the drinking water intake is drawing from.

Percent Crop Area Correction Factor

The PCA is a watershed-based modification. Implicit in its application is the assumption that currently-used field-scale models reflect basin-scale processes consistently for all pesticides and uses. In other words, we assume that the large field simulated by the coupled PRZM and EXAMS models is a reasonable approximation of pesticide fate and transport within a watershed that contains a drinking water reservoir. If the

models fail to capture pertinent basin-scale fate and transport processes consistently for all pesticides and all uses, the application of a factor that reduces the estimated concentrations predicted by modeling could, in some instances, result in inadvertently passing a chemical through the screen that may actually pose a risk. Some preliminary assessments made in the development of the PCA suggest that PRZM/EXAMS may not be realistically capturing basin-scale processes for all pesticides or for all uses. A preliminary survey of water assessments which compared screening model estimates to readily available monitoring data suggest uneven model results. In some instances, the screening model estimates are more than an order of magnitude greater than the highest concentrations reported in available monitoring data; in other instances, the model estimates are less than monitoring concentrations. Because of these concerns, the SAP recommended using the PCA only for "major" crops in the Midwest. For other crops, development of PCA's will depend on the availability of relevant monitoring data that could be used to evaluate the result of the PCA adjustment.

The spatial data used for the PCA came from readily-available sources and have a number of inherent limitations:

- The size of the 8-digit HUC [mean = 366,989 ha; range = 6.7-2,282,081 ha; n = 2,111] may not provide reasonable estimates of actual PCA's for smaller watersheds. The watersheds that drain into drinking water reservoirs are generally smaller than the 8-digit HUC and may be better represented by watersheds defined for drinking water intakes.
- The conversion of the county level data to watershed-based percent crop areas assumes the distribution of the crops within a county is uniform and homogeneous throughout the county area. Distance between the treated fields and the water body is not addressed.
- The PCA's were generated using data from the 1992 Census of Agriculture. However, recent changes in the agriculture sector from farm bill legislation may significantly impact the distribution of crops throughout the country. The methods described in this report can rapidly be updated as more current agricultural crops data are obtained. The assumption that yearly changes in cropping patterns will cause minimal impact needs to be evaluated.

The PCA adjustment is only applicable to pesticides applied to agricultural crops. Contributions to surface waters from non-agricultural uses such as urban environments are not well-modeled. Currently, non-agricultural uses are not included in the screening model assessments for drinking water.

The PCA does not consider percent crop treated because detailed pesticide usage data are extremely limited at this time. Detailed pesticide usage data are currently available for only a few states.

Groundwater

Monitoring

EFED has limited targeted monitoring data on the concentrations of diuron and its degradates in groundwater. Table 7 shows validated monitoring data for diuron that are available for the states of California (CA), Florida (FL), Georgia (GA), and Texas (TX).

Table 7. Groundwater monitoring data for diuron. Number of wells sampled (number of wells with residues)¹¹.

State	number of well	range of conc. (ppb)
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CA	2010 (82)	0.05 - 3.95
FL	15385 (9)	1.18 - 5.37
GA	70 (67)	1.00 - 5.00
TX	31 (2)	0.01 - 0.02

According to the Ground Water Protection Section of the Florida Department of Environmental Protection¹², ground water samples from wells collected between May/1990 and November/1997, showed diuron detections ranging from 0.94 - 12 ppb (detection limit = 0.48 ppb). The arithmetic mean concentration was 2.44 ppb. Well water samples were collected from the following counties: Highlands, Jackson, Lake, Orange, and Polk. With the exception of the 12 ppb sample in Orange County, the majority of the detections were in Highlands County where citrus is grown. Diuron concentrations in Highlands County decreased with time to about 1 ppb but were detected every year. In Polk County, diuron concentrations show a seasonal pattern, with highest concentrations in the spring and lowest concentrations in the fall, but was not detected in all years.

The US Geological Survey (USGS) National Water Quality Assessment Program (NAWQA)¹³ analyzed pesticide occurrence and concentrations for major aquifers and shallow ground water in agricultural areas (detection limit = 0.05 ppb). Analysis of 2608 samples (major aquifers study) showed diuron in 71% of the samples analyzed with a maximum concentration of 0.34 ppb. Maximum diuron concentration in 897 samples from shallow groundwater sites was 2.0 ppb, with diuron detected in only 1.23% of samples analyzed (USGS, 1998). A major component of the sampling design in the NAWQA study was to target specific watersheds and shallow ground water areas that are influenced primarily by a single dominant land use(agricultural or urban) that is important in the particular area. The ground-water data were primarily collected from a combination of production and monitoring wells. Ground-water sampling sites were sampled for pesticides from a single snap-shot in time.

Even though, the groundwater monitoring data collected by NAWQA are from sites considered typical for use areas, the frequency of sampling and the length of sampling period were not sufficient to represent the temporal and spatial requirements for regulatory purposes.

Major component of the sampling design in the NAWQA study was to target specific watersheds and shallow ground water areas that are influenced primarily by a single dominant land use (agricultural or urban) that is important in the particular area. The ground-water data were primarily collected from a combination of production and monitoring wells. Ground-water sites in the ground-water data were sampled for pesticides from a single snap-shot in time.

Modeling

The SCI-GROW model was used to estimate potential groundwater concentrations for diuron and its degradates.

Tables 8, and 9 show input parameters and output for SCI-GROW modeling of diuron and its degradates, respectively.

Table 8. Input parameters for diuron and its degradates used in the SCI-GROW model.

compound	appl. rate (lb ai/acre)	No. of appl. /year	Aerobic soil $t_{1/2}$ (d)	Koc (mL/ g)	Source/Quality of data
Diuron	9.6	1	372	468	label (EPA Reg. No. 1812-362); MRID# 44490501; MRID# 41719303; Input parameters guideline (Aug. 2000). Good data.
DCPMU	2.03*	1	770	468	label (EPA Reg. No. 1812-362); MRID# 44490501; MRID# ; Input parameters guideline (Aug. 2000). Good data.
DCPU	0.08*	1	770	468	label (EPA Reg. No. 1812-362); MRID# 44490501; MRID# 41719303; Input parameters guideline (Aug. 2000). Good data.
3,4-DCA	0.0021*	1	30	468	label (EPA Reg. No. 1812-362); MRID# 44490501; MRID# 41719303; MRID# 41538701; Input parameters guideline (Aug. 2000). Good data.

mCPDMU	1.12*	1	115	468	label (EPA Reg. No. 1812-362); MRID# 44490501; MRID# 41719303; MRID# 42260501; Input parameters guideline (Aug. 2000). Good data.
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*: An equivalent value based on conversion of diuron to degradates.

Table 9. SCI-GROW estimated environmental concentrations for diuron and its degradates in groundwater.

Toxicity end point	model EECs (Fg/L)					use(s) modeled
	Diuron	DCPMU	DCPU	3,4-DCA	mCPDMU	
acute	6.52	2.50	0.09	0.0002	0.30	one application of diuron on citrus @ 9.6 lb ai/acre
Chronic (non cancer)	6.52	2.50	0.09	0.0002	0.30	
Chronic (cancer)	6.52	2.50	0.09	0.0002	0.30	

The SCI-GROW screening model developed by EFED indicates that diuron and its degradates concentrations are much less than those estimated for surface water. SCI-GROW estimated concentrations of diuron do fall within the values from monitoring data shown in Table 8, but below some of the reported monitoring data. This means that SCI-GROW could underestimate chemical concentrations in typical use areas when the pesticide is used at the maximum allowed label rate in areas with ground water exceptionally vulnerable to contamination such as Florida.

Limitations of the SCI-GROW2 Analysis

The SCI-GROW model (Screening Concentrations in Ground Water) is a model for estimating concentrations of pesticides in ground water under "maximum loading" conditions. SCI-GROW provides a screening concentration, an estimate of likely ground water concentrations if the pesticide is used at the maximum allowed label rate in areas with ground water that is vulnerable to contamination. In most cases, a majority of the use area will have ground water that is less vulnerable to contamination than the areas used to derive the SCI-GROW estimate.

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APPENDIX I

IR-PCA PRZM/EXAMS

INPUT AND OUT PUT FILES FOR MODELING DIURON AND ITS DEGRADATES

DIURON

PRZM3.12 Input File, flcit.inp (Jan 28 2000)
Location: Osceola County, FL.; Crop: citrus; MLRA 156A

0.77	0.15	0	25.00	1	1				
4									
0.10	0.13	1.00	10		4	1.00	345.0		
1									
1	0.10	100.00	80.00	3	94	84	89	0.00	100.00
1	3								

0101 21 9 2209

0.10 0.10 0.10

.023 .023 .023

36

020148	030148	311248	1
020149	030149	311249	1
020150	030150	311250	1
020151	030151	311251	1
020152	030152	311252	1
020153	030153	311253	1
020154	030154	311254	1
020155	030155	311255	1
020156	030156	311256	1
020157	030157	311257	1
020158	030158	311258	1
020159	030159	311259	1
020160	030160	311260	1
020161	030161	311261	1
020162	030162	311262	1
020163	030163	311263	1
020164	030164	311264	1
020165	030165	311265	1
020166	030166	311266	1
020167	030167	311267	1
020168	030168	311268	1
020169	030169	311269	1
020170	030170	311270	1
020171	030171	311271	1
020172	030172	311272	1
020173	030173	311273	1
020174	030174	311274	1
020175	030175	311275	1
020176	030176	311276	1
020177	030177	311277	1
020178	030178	311278	1
020179	030179	311279	1
020180	030180	311280	1
020181	030181	311281	1
020182	030182	311282	1
020183	030183	311283	1

Application: 3,4-DCA: One ground appl. @ 9.6 lb a.i./ac (10.7 Kg/h) @99% eff,
w/6.4%drift

36 1 0 0

Diuron

070148 0 2 0.00 10.76 0.99 0.064

070149	0	2	0.00	10.76	0.99	0.064
070150	0	2	0.00	10.76	0.99	0.064
070151	0	2	0.00	10.76	0.99	0.064
070152	0	2	0.00	10.76	0.99	0.064
070153	0	2	0.00	10.76	0.99	0.064
070154	0	2	0.00	10.76	0.99	0.064
070155	0	2	0.00	10.76	0.99	0.064
070156	0	2	0.00	10.76	0.99	0.064
070157	0	2	0.00	10.76	0.99	0.064
070158	0	2	0.00	10.76	0.99	0.064
070159	0	2	0.00	10.76	0.99	0.064
070160	0	2	0.00	10.76	0.99	0.064
070161	0	2	0.00	10.76	0.99	0.064
070162	0	2	0.00	10.76	0.99	0.064
070163	0	2	0.00	10.76	0.99	0.064
070164	0	2	0.00	10.76	0.99	0.064
070165	0	2	0.00	10.76	0.99	0.064
070166	0	2	0.00	10.76	0.99	0.064
070167	0	2	0.00	10.76	0.99	0.064
070168	0	2	0.00	10.76	0.99	0.064
070169	0	2	0.00	10.76	0.99	0.064
070170	0	2	0.00	10.76	0.99	0.064
070171	0	2	0.00	10.76	0.99	0.064
070172	0	2	0.00	10.76	0.99	0.064
070173	0	2	0.00	10.76	0.99	0.064
070174	0	2	0.00	10.76	0.99	0.064
070175	0	2	0.00	10.76	0.99	0.064
070176	0	2	0.00	10.76	0.99	0.064
070177	0	2	0.00	10.76	0.99	0.064
070178	0	2	0.00	10.76	0.99	0.064
070179	0	2	0.00	10.76	0.99	0.064
070180	0	2	0.00	10.76	0.99	0.064
070181	0	2	0.00	10.76	0.99	0.064
070182	0	2	0.00	10.76	0.99	0.064
070183	0	2	0.00	10.76	0.99	0.064
0.00		1	0.00			
0.00		0.000	0.50			

Soil Series: Adamsville sand; Hydrologic Group C

100.00		0	0	0		
0	0	0	0	0	0	
0.0		0.00	00.00			
3						
1	10.000	1.440	0.086	0.000	0.000	0.000
	.002	.002	0.000			
	0.100	0.086	0.036	0.580	14.00	
2	10.000	1.440	0.086	0.000	0.000	0.000
	.002	.002	0.000			
	1.000	0.086	0.036	0.580	14.00	
3	80.000	1.580	0.030	0.000	0.000	0.000
	.002	.002	0.000			
	5.000	0.030	0.023	0.116	14.00	

0									
WATR	YEAR	10	PEST	YEAR	10	CONC	YEAR	10	1
6									
11	-----								
1	DAY								
RUNF	TSER	0	0	1.E0					

OUTPUT FILE

WATER COLUMN DISSOLVED CONCENTRATION (PPB)

YEAR	PEAK	96 HOUR	21 DAY	60 DAY	90 DAY	YEARLY
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1948	351.000	340.000	300.000	274.000	249.000	137.000
1949	1920.000	1860.000	1680.000	1450.000	1250.000	448.000
1950	306.000	296.000	264.000	229.000	213.000	112.000
1951	477.000	462.000	406.000	310.000	281.000	135.000
1952	413.000	399.000	350.000	273.000	231.000	95.430
1953	490.000	476.000	438.000	399.000	346.000	143.000
1954	512.000	496.000	446.000	375.000	329.000	158.000
1955	551.000	539.000	498.000	405.000	342.000	137.000
1956	351.000	340.000	307.000	274.000	247.000	110.000
1957	728.000	706.000	621.000	473.000	397.000	181.000
1958	680.000	658.000	576.000	450.000	383.000	175.000
1959	319.000	313.000	280.000	223.000	215.000	119.000
1960	1010.000	975.000	875.000	679.000	566.000	203.000
1961	562.000	545.000	481.000	372.000	321.000	182.000
1962	416.000	403.000	355.000	288.000	248.000	105.000
1963	417.000	404.000	354.000	310.000	267.000	115.000
1964	504.000	495.000	450.000	350.000	312.000	125.000
1965	351.000	340.000	300.000	251.000	219.000	111.000
1966	980.000	951.000	846.000	679.000	575.000	255.000
1967	527.000	510.000	467.000	370.000	308.000	133.000
1968	538.000	526.000	502.000	421.000	358.000	147.000
1969	438.000	425.000	374.000	332.000	291.000	129.000
1970	584.000	573.000	512.000	399.000	332.000	147.000
1971	592.000	577.000	524.000	449.000	382.000	155.000
1972	428.000	418.000	388.000	316.000	265.000	119.000
1973	381.000	370.000	327.000	259.000	219.000	97.670
1974	402.000	389.000	344.000	260.000	227.000	121.000
1975	177.000	171.000	152.000	128.000	109.000	48.160
1976	339.000	329.000	301.000	257.000	236.000	116.000
1977	1560.000	1510.000	1360.000	1190.000	1020.000	369.000
1978	210.000	204.000	187.000	162.000	154.000	78.430

1979	2330.000	2260.000	2010.000	1580.000	1330.000	454.000
1980	997.000	969.000	885.000	699.000	613.000	255.000
1981	609.000	591.000	521.000	398.000	349.000	154.000
1982	1110.000	1090.000	994.000	810.000	689.000	255.000
1983	749.000	726.000	686.000	633.000	563.000	218.000

SORTED FOR PLOTTING

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PROB	PEAK	96 HOUR	21 DAY	60 DAY	90 DAY	YEARLY
0.027	2330.000	2260.000	2010.000	1580.000	1330.000	454.000
0.054	1920.000	1860.000	1680.000	1450.000	1250.000	448.000
0.081	1560.000	1510.000	1360.000	1190.000	1020.000	369.000
0.108	1110.000	1090.000	994.000	810.000	689.000	255.000
0.135	1010.000	975.000	885.000	699.000	613.000	255.000
0.162	997.000	969.000	875.000	679.000	575.000	255.000
0.189	980.000	951.000	846.000	679.000	566.000	218.000
0.216	749.000	726.000	686.000	633.000	563.000	203.000
0.243	728.000	706.000	621.000	473.000	397.000	182.000
0.270	680.000	658.000	576.000	450.000	383.000	181.000
0.297	609.000	591.000	524.000	449.000	382.000	175.000
0.324	592.000	577.000	521.000	421.000	358.000	158.000
0.351	584.000	573.000	512.000	405.000	349.000	155.000
0.378	562.000	545.000	502.000	399.000	346.000	154.000
0.405	551.000	539.000	498.000	399.000	342.000	147.000
0.432	538.000	526.000	481.000	398.000	332.000	147.000
0.459	527.000	510.000	467.000	375.000	329.000	143.000
0.486	512.000	496.000	450.000	372.000	321.000	137.000
0.514	504.000	495.000	446.000	370.000	312.000	137.000
0.541	490.000	476.000	438.000	350.000	308.000	135.000
0.568	477.000	462.000	406.000	332.000	291.000	133.000
0.595	438.000	425.000	388.000	316.000	281.000	129.000
0.622	428.000	418.000	374.000	310.000	267.000	125.000
0.649	417.000	404.000	355.000	310.000	265.000	121.000
0.676	416.000	403.000	354.000	288.000	249.000	119.000
0.703	413.000	399.000	350.000	274.000	248.000	119.000
0.730	402.000	389.000	344.000	274.000	247.000	116.000
0.757	381.000	370.000	327.000	273.000	236.000	115.000
0.784	351.000	340.000	307.000	260.000	231.000	112.000
0.811	351.000	340.000	301.000	259.000	227.000	111.000
0.838	351.000	340.000	300.000	257.000	219.000	110.000
0.865	339.000	329.000	300.000	251.000	219.000	105.000
0.892	319.000	313.000	280.000	229.000	215.000	97.670
0.919	306.000	296.000	264.000	223.000	213.000	95.430
0.946	210.000	204.000	187.000	162.000	154.000	78.430
0.973	177.000	171.000	152.000	128.000	109.000	48.160
1/10	1245.000	1216.000	1103.800	924.000	788.300	289.200

MEAN OF ANNUAL VALUES = 167.852

STANDARD DEVIATION OF ANNUAL VALUES = 91.941

UPPER 90% CONFIDENCE LIMIT ON MEAN = 190.542

DCPMU

PRZM3.12 Input File, flcit.inp (Jan 28 2000)

Location: Osceola County, FL.; Crop: citrus; MLRA 156A

0.77	0.15	0	25.00	1	1						
4											
0.10	0.13	1.00	172.8			4	1.00	600.0			
1											
1	0.10	100.00	80.00	3	94	84	89	0.00	100.00		
1	3										
0101 21 9 2209											
0.10 0.10 0.10											
.023 .023 .023											
36											
020148 030148 311248			1								
020149 030149 311249			1								
020150 030150 311250			1								
020151 030151 311251			1								
020152 030152 311252			1								
020153 030153 311253			1								
020154 030154 311254			1								
020155 030155 311255			1								
020156 030156 311256			1								
020157 030157 311257			1								
020158 030158 311258			1								
020159 030159 311259			1								
020160 030160 311260			1								
020161 030161 311261			1								
020162 030162 311262			1								
020163 030163 311263			1								
020164 030164 311264			1								
020165 030165 311265			1								
020166 030166 311266			1								
020167 030167 311267			1								
020168 030168 311268			1								
020169 030169 311269			1								
020170 030170 311270			1								
020171 030171 311271			1								
020172 030172 311272			1								
020173 030173 311273			1								
020174 030174 311274			1								

020175	030175	311275	1
020176	030176	311276	1
020177	030177	311277	1
020178	030178	311278	1
020179	030179	311279	1
020180	030180	311280	1
020181	030181	311281	1
020182	030182	311282	1
020183	030183	311283	1

Application: DCPMU: One ground appl. @ 2.03 lb a.i./ac (2.27 Kg/h) @99% eff,
w/6.4%drift

36	1	0	0
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DCPMU

010748	0 2 0.00	2.27 0.99	0.064
010749	0 2 0.00	2.27 0.99	0.064
010750	0 2 0.00	2.27 0.99	0.064
010751	0 2 0.00	2.27 0.99	0.064
010752	0 2 0.00	2.27 0.99	0.064
010753	0 2 0.00	2.27 0.99	0.064
010754	0 2 0.00	2.27 0.99	0.064
010755	0 2 0.00	2.27 0.99	0.064
010756	0 2 0.00	2.27 0.99	0.064
010757	0 2 0.00	2.27 0.99	0.064
010758	0 2 0.00	2.27 0.99	0.064
010759	0 2 0.00	2.27 0.99	0.064
010760	0 2 0.00	2.27 0.99	0.064
010761	0 2 0.00	2.27 0.99	0.064
010762	0 2 0.00	2.27 0.99	0.064
010763	0 2 0.00	2.27 0.99	0.064
010764	0 2 0.00	2.27 0.99	0.064
010765	0 2 0.00	2.27 0.99	0.064
010766	0 2 0.00	2.27 0.99	0.064
010767	0 2 0.00	2.27 0.99	0.064
010768	0 2 0.00	2.27 0.99	0.064
010769	0 2 0.00	2.27 0.99	0.064
010770	0 2 0.00	2.27 0.99	0.064
010771	0 2 0.00	2.27 0.99	0.064
010772	0 2 0.00	2.27 0.99	0.064
010773	0 2 0.00	2.27 0.99	0.064
010774	0 2 0.00	2.27 0.99	0.064
010775	0 2 0.00	2.27 0.99	0.064
010776	0 2 0.00	2.27 0.99	0.064
010777	0 2 0.00	2.27 0.99	0.064
010778	0 2 0.00	2.27 0.99	0.064
010779	0 2 0.00	2.27 0.99	0.064
010780	0 2 0.00	2.27 0.99	0.064
010781	0 2 0.00	2.27 0.99	0.064
010782	0 2 0.00	2.27 0.99	0.064
010783	0 2 0.00	2.27 0.99	0.064

0.00	1	0.00
0.00	0.000	0.50

Soil Series: Adamsville sand; Hydrologic Group C

100.00	0	0	0						
0	0	0	0	0	0				
0.0	0.00	00.00							
3									
1	10.000	1.440	0.086	0.000	0.000	0.000			
	.009	.009	0.000						
	0.100	0.086	0.036	0.580	14.00				
2	10.000	1.440	0.086	0.000	0.000	0.000			
	.009	.009	0.000						
	1.000	0.086	0.036	0.580	14.00				
3	80.000	1.580	0.030	0.000	0.000	0.000			
	.009	.009	0.000						
	5.000	0.030	0.023	0.116	14.00				
0									
WATR	YEAR	10	PEST	YEAR	10	CONC	YEAR	10	1
6									
11	-----								
1	DAY								
RUNF	TSER	0	0	1.E0					

OUTPUT FILE

WATER COLUMN DISSOLVED CONCENTRATION (PPB)

YEAR	PEAK	96 HOUR	21 DAY	60 DAY	90 DAY	YEARLY
----	----	-----	-----	-----	-----	-----
1948	24.990	23.880	21.930	19.630	19.030	7.345
1949	13.850	13.300	11.630	10.240	8.940	3.738
1950	27.340	26.130	23.770	19.860	17.560	6.493
1951	61.630	59.040	50.300	36.310	29.200	9.915
1952	98.750	94.410	78.890	56.350	45.540	15.380
1953	34.930	33.420	28.450	25.060	21.920	8.402
1954	49.500	47.300	43.730	31.770	26.870	9.186
1955	24.200	23.130	19.600	15.180	13.230	5.329
1956	23.340	22.480	19.800	15.370	13.170	4.987
1957	77.010	74.100	62.000	52.420	44.450	14.820
1958	27.160	26.390	23.010	17.690	15.500	5.692
1959	30.280	29.570	27.500	25.120	22.530	7.938
1960	39.220	37.660	33.950	26.420	22.100	8.718
1961	14.690	14.050	12.030	9.927	8.508	3.954
1962	23.590	22.580	20.690	15.960	14.460	5.580
1963	24.690	23.700	21.370	16.260	13.340	5.172
1964	47.560	45.500	38.450	28.970	24.490	9.142
1965	23.240	22.310	19.310	16.740	15.780	6.802

1966	19.870	19.010	16.520	13.780	12.080	4.739
1967	39.600	37.840	31.640	28.120	24.630	8.865
1968	25.620	24.510	22.680	18.040	16.100	6.135
1969	34.740	33.230	30.440	27.080	23.370	7.923
1970	15.350	14.730	12.690	9.355	8.026	3.635
1971	16.650	15.910	13.520	12.360	12.330	4.912
1972	40.250	38.840	33.780	27.100	23.140	7.859
1973	18.960	18.240	16.990	14.140	13.370	5.461
1974	21.770	20.830	18.820	14.480	12.230	4.570
1975	25.430	24.310	20.190	16.120	13.640	4.879
1976	29.110	28.180	23.930	17.990	17.420	6.575
1977	21.570	20.610	17.620	15.490	14.370	5.469
1978	5.394	5.227	4.425	3.703	3.483	1.825
1979	29.560	28.280	25.580	20.670	18.000	6.558
1980	35.180	33.620	29.890	26.040	22.060	8.045
1981	49.070	47.300	40.870	32.650	27.050	9.604
1982	7.314	7.062	6.518	5.605	5.538	3.129
1983	52.760	51.190	44.070	32.050	25.940	8.631

SORTED FOR PLOTTING

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PROB	PEAK	96 HOUR	21 DAY	60 DAY	90 DAY	YEARLY
0.027	98.750	94.410	78.890	56.350	45.540	15.380
0.054	77.010	74.100	62.000	52.420	44.450	14.820
0.081	61.630	59.040	50.300	36.310	29.200	9.915
0.108	52.760	51.190	44.070	32.650	27.050	9.604
0.135	49.500	47.300	43.730	32.050	26.870	9.186
0.162	49.070	47.300	40.870	31.770	25.940	9.142
0.189	47.560	45.500	38.450	28.970	24.630	8.865
0.216	40.250	38.840	33.950	28.120	24.490	8.718
0.243	39.600	37.840	33.780	27.100	23.370	8.631
0.270	39.220	37.660	31.640	27.080	23.140	8.402
0.297	35.180	33.620	30.440	26.420	22.530	8.045
0.324	34.930	33.420	29.890	26.040	22.100	7.938
0.351	34.740	33.230	28.450	25.120	22.060	7.923
0.378	30.280	29.570	27.500	25.060	21.920	7.859
0.405	29.560	28.280	25.580	20.670	19.030	7.345
0.432	29.110	28.180	23.930	19.860	18.000	6.802
0.459	27.340	26.390	23.770	19.630	17.560	6.575
0.486	27.160	26.130	23.010	18.040	17.420	6.558
0.514	25.620	24.510	22.680	17.990	16.100	6.493
0.541	25.430	24.310	21.930	17.690	15.780	6.135
0.568	24.990	23.880	21.370	16.740	15.500	5.692
0.595	24.690	23.700	20.690	16.260	14.460	5.580
0.622	24.200	23.130	20.190	16.120	14.370	5.469
0.649	23.590	22.580	19.800	15.960	13.640	5.461
0.676	23.340	22.480	19.600	15.490	13.370	5.329
0.703	23.240	22.310	19.310	15.370	13.340	5.172

0.730	21.770	20.830	18.820	15.180	13.230	4.987
0.757	21.570	20.610	17.620	14.480	13.170	4.912
0.784	19.870	19.010	16.990	14.140	12.330	4.879
0.811	18.960	18.240	16.520	13.780	12.230	4.739
0.838	16.650	15.910	13.520	12.360	12.080	4.570
0.865	15.350	14.730	12.690	10.240	8.940	3.954
0.892	14.690	14.050	12.030	9.927	8.508	3.738
0.919	13.850	13.300	11.630	9.355	8.026	3.635
0.946	7.314	7.062	6.518	5.605	5.538	3.129
0.973	5.394	5.227	4.425	3.703	3.483	1.825
1/10	55.421	53.545	45.939	33.748	27.695	9.697

MEAN OF ANNUAL VALUES = 6.872

STANDARD DEVIATION OF ANNUAL VALUES = 2.844

UPPER 90% CONFIDENCE LIMIT ON MEAN = 7.574

DCPU

PRZM3.12 Input File, flcit.inp (Jan 28 2000)
 Location: Osceola County, FL.; Crop: citrus; MLRA 156A

0.77	0.15	0	25.00	1	1		
4							
0.10	0.13	1.00	172.8		4	1.00	600.0
1							
1	0.10	100.00	80.00	3	94	84	89
1	3						
0101	21	9	2209				
0.10	0.10	0.10					
.023	.023	.023					
36							
020148	030148	311248	1				
020149	030149	311249	1				
020150	030150	311250	1				
020151	030151	311251	1				
020152	030152	311252	1				
020153	030153	311253	1				
020154	030154	311254	1				
020155	030155	311255	1				
020156	030156	311256	1				
020157	030157	311257	1				
020158	030158	311258	1				
020159	030159	311259	1				
020160	030160	311260	1				
020161	030161	311261	1				

020162	030162	311262	1
020163	030163	311263	1
020164	030164	311264	1
020165	030165	311265	1
020166	030166	311266	1
020167	030167	311267	1
020168	030168	311268	1
020169	030169	311269	1
020170	030170	311270	1
020171	030171	311271	1
020172	030172	311272	1
020173	030173	311273	1
020174	030174	311274	1
020175	030175	311275	1
020176	030176	311276	1
020177	030177	311277	1
020178	030178	311278	1
020179	030179	311279	1
020180	030180	311280	1
020181	030181	311281	1
020182	030182	311282	1
020183	030183	311283	1

Application: DCPU: One ground appl. @ 0.08 lb a.i./ac (0.09 Kg/h) @99% eff,
w/6.4%drift

36	1	0	0
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DCPU

010748	0	2	0.00	0.09	0.99	0.064
010749	0	2	0.00	0.09	0.99	0.064
010750	0	2	0.00	0.09	0.99	0.064
010751	0	2	0.00	0.09	0.99	0.064
010752	0	2	0.00	0.09	0.99	0.064
010753	0	2	0.00	0.09	0.99	0.064
010754	0	2	0.00	0.09	0.99	0.064
010755	0	2	0.00	0.09	0.99	0.064
010756	0	2	0.00	0.09	0.99	0.064
010757	0	2	0.00	0.09	0.99	0.064
010758	0	2	0.00	0.09	0.99	0.064
010759	0	2	0.00	0.09	0.99	0.064
010760	0	2	0.00	0.09	0.99	0.064
010761	0	2	0.00	0.09	0.99	0.064
010762	0	2	0.00	0.09	0.99	0.064
010763	0	2	0.00	0.09	0.99	0.064
010764	0	2	0.00	0.09	0.99	0.064
010765	0	2	0.00	0.09	0.99	0.064
010766	0	2	0.00	0.09	0.99	0.064
010767	0	2	0.00	0.09	0.99	0.064
010768	0	2	0.00	0.09	0.99	0.064
010769	0	2	0.00	0.09	0.99	0.064
010770	0	2	0.00	0.09	0.99	0.064
010771	0	2	0.00	0.09	0.99	0.064
010772	0	2	0.00	0.09	0.99	0.064

010773 0 2 0.00 0.09 0.99 0.064
 010774 0 2 0.00 0.09 0.99 0.064
 010775 0 2 0.00 0.09 0.99 0.064
 010776 0 2 0.00 0.09 0.99 0.064
 010777 0 2 0.00 0.09 0.99 0.064
 010778 0 2 0.00 0.09 0.99 0.064
 010779 0 2 0.00 0.09 0.99 0.064
 010780 0 2 0.00 0.09 0.99 0.064
 010781 0 2 0.00 0.09 0.99 0.064
 010782 0 2 0.00 0.09 0.99 0.064
 010783 0 2 0.00 0.09 0.99 0.064
 0.00 1 0.00
 0.00 0.000 0.50

Soil Series: Adamsville sand; Hydrologic Group C

100.00	0	0	0						
0	0	0	0	0					
0.0	0.00	00.00							
3									
1	10.000	1.440	0.086	0.000	0.000	0.000			
	.009	.009	0.000						
	0.100	0.086	0.036	0.580	14.00				
2	10.000	1.440	0.086	0.000	0.000	0.000			
	.009	.009	0.000						
	1.000	0.086	0.036	0.580	14.00				
3	80.000	1.580	0.030	0.000	0.000	0.000			
	.009	.009	0.000						
	5.000	0.030	0.023	0.116	14.00				
0									
WATR	YEAR	10	PEST	YEAR	10	CONC	YEAR	10	1
6									
11	-----								
1	DAY								
RUNF	TSER	0	0	1.E0					

OUTPUT FILE

WATER COLUMN DISSOLVED CONCENTRATION (PPB)

YEAR	PEAK	96 HOUR	21 DAY	60 DAY	90 DAY	YEARLY
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1948	0.991	0.947	0.869	0.778	0.754	0.291
1949	0.549	0.527	0.461	0.406	0.354	0.148
1950	1.084	1.036	0.942	0.787	0.696	0.257
1951	2.443	2.341	1.994	1.440	1.158	0.393
1952	3.915	3.743	3.128	2.234	1.805	0.610
1953	1.385	1.325	1.128	0.994	0.869	0.333

1954	1.963	1.875	1.734	1.260	1.065	0.364
1955	0.960	0.917	0.777	0.602	0.525	0.211
1956	0.925	0.892	0.785	0.609	0.522	0.198
1957	3.053	2.938	2.458	2.078	1.762	0.588
1958	1.077	1.047	0.913	0.702	0.615	0.226
1959	1.201	1.173	1.090	0.996	0.893	0.315
1960	1.555	1.493	1.346	1.048	0.876	0.346
1961	0.582	0.557	0.477	0.394	0.337	0.157
1962	0.935	0.895	0.820	0.633	0.573	0.221
1963	0.979	0.940	0.847	0.645	0.529	0.205
1964	1.886	1.804	1.525	1.149	0.971	0.362
1965	0.921	0.884	0.766	0.664	0.626	0.270
1966	0.788	0.753	0.655	0.546	0.479	0.188
1967	1.570	1.500	1.255	1.115	0.977	0.352
1968	1.016	0.971	0.899	0.715	0.638	0.243
1969	1.377	1.318	1.207	1.074	0.927	0.314
1970	0.609	0.584	0.503	0.371	0.318	0.144
1971	0.660	0.631	0.536	0.490	0.489	0.195
1972	1.596	1.540	1.339	1.074	0.918	0.312
1973	0.752	0.723	0.674	0.561	0.530	0.216
1974	0.863	0.826	0.746	0.574	0.485	0.181
1975	1.008	0.964	0.800	0.639	0.540	0.193
1976	1.154	1.117	0.949	0.713	0.691	0.261
1977	0.855	0.817	0.699	0.614	0.570	0.217
1978	0.214	0.207	0.175	0.147	0.138	0.072
1979	1.172	1.121	1.014	0.820	0.714	0.260
1980	1.395	1.333	1.185	1.032	0.875	0.319
1981	1.946	1.876	1.621	1.295	1.073	0.381
1982	0.290	0.280	0.258	0.222	0.220	0.124
1983	2.091	2.029	1.747	1.270	1.028	0.342

SORTED FOR PLOTTING

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PROB	PEAK	96 HOUR	21 DAY	60 DAY	90 DAY	YEARLY
0.027	3.915	3.743	3.128	2.234	1.805	0.610
0.054	3.053	2.938	2.458	2.078	1.762	0.588
0.081	2.443	2.341	1.994	1.440	1.158	0.393
0.108	2.091	2.029	1.747	1.295	1.073	0.381
0.135	1.963	1.876	1.734	1.270	1.065	0.364
0.162	1.946	1.875	1.621	1.260	1.028	0.362
0.189	1.886	1.804	1.525	1.149	0.977	0.352
0.216	1.596	1.540	1.346	1.115	0.971	0.346
0.243	1.570	1.500	1.339	1.074	0.927	0.342
0.270	1.555	1.493	1.255	1.074	0.918	0.333
0.297	1.395	1.333	1.207	1.048	0.893	0.319
0.324	1.385	1.325	1.185	1.032	0.876	0.315
0.351	1.377	1.318	1.128	0.996	0.875	0.314
0.378	1.201	1.173	1.090	0.994	0.869	0.312

0.405	1.172	1.121	1.014	0.820	0.754	0.291
0.432	1.154	1.117	0.949	0.787	0.714	0.270
0.459	1.084	1.047	0.942	0.778	0.696	0.261
0.486	1.077	1.036	0.913	0.715	0.691	0.260
0.514	1.016	0.971	0.899	0.713	0.638	0.257
0.541	1.008	0.964	0.869	0.702	0.626	0.243
0.568	0.991	0.947	0.847	0.664	0.615	0.226
0.595	0.979	0.940	0.820	0.645	0.573	0.221
0.622	0.960	0.917	0.800	0.639	0.570	0.217
0.649	0.935	0.895	0.785	0.633	0.540	0.216
0.676	0.925	0.892	0.777	0.614	0.530	0.211
0.703	0.921	0.884	0.766	0.609	0.529	0.205
0.730	0.863	0.826	0.746	0.602	0.525	0.198
0.757	0.855	0.817	0.699	0.574	0.522	0.195
0.784	0.788	0.753	0.674	0.561	0.489	0.193
0.811	0.752	0.723	0.655	0.546	0.485	0.188
0.838	0.660	0.631	0.536	0.490	0.479	0.181
0.865	0.609	0.584	0.503	0.406	0.354	0.157
0.892	0.582	0.557	0.477	0.394	0.337	0.148
0.919	0.549	0.527	0.461	0.371	0.318	0.144
0.946	0.290	0.280	0.258	0.222	0.220	0.124
0.973	0.214	0.207	0.175	0.147	0.138	0.072
1/10	2.197	2.123	1.821	1.339	1.099	0.384

MEAN OF ANNUAL VALUES = 0.272

STANDARD DEVIATION OF ANNUAL VALUES = 0.113

UPPER 90% CONFIDENCE LIMIT ON MEAN = 0.300

3,4-DCA

PRZM3.12 Input File, flcit.inp (Jan 28 2000)
 Location: Osceola County, FL.; Crop: citrus; MLRA 156A

0.77	0.15	0	25.00	1	1	
4						
0.10	0.13	1.00	10		4	1.00
1						345.0
1	0.10	100.00	80.00	3	94	84
1	3			89	0.00	100.00
0101	21	9	2209			
0.10	0.10	0.10				
.023	.023	.023				

020148	030148	311248	1
020149	030149	311249	1
020150	030150	311250	1
020151	030151	311251	1
020152	030152	311252	1
020153	030153	311253	1
020154	030154	311254	1
020155	030155	311255	1
020156	030156	311256	1
020157	030157	311257	1
020158	030158	311258	1
020159	030159	311259	1
020160	030160	311260	1
020161	030161	311261	1
020162	030162	311262	1
020163	030163	311263	1
020164	030164	311264	1
020165	030165	311265	1
020166	030166	311266	1
020167	030167	311267	1
020168	030168	311268	1
020169	030169	311269	1
020170	030170	311270	1
020171	030171	311271	1
020172	030172	311272	1
020173	030173	311273	1
020174	030174	311274	1
020175	030175	311275	1
020176	030176	311276	1
020177	030177	311277	1
020178	030178	311278	1
020179	030179	311279	1
020180	030180	311280	1
020181	030181	311281	1
020182	030182	311282	1
020183	030183	311283	1

Application: 3,4-DCA: One ground appl. @ 0.002 lb a.i./ac (0.0022 Kg/h) @99% eff, w/6.4%drift

36	1	0	0
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3,4-DCA

010748	0 2 0.00	0.0022	0.99	0.064
010749	0 2 0.00	0.0022	0.99	0.064
010750	0 2 0.00	0.0022	0.99	0.064
010751	0 2 0.00	0.0022	0.99	0.064
010752	0 2 0.00	0.0022	0.99	0.064
010753	0 2 0.00	0.0022	0.99	0.064
010754	0 2 0.00	0.0022	0.99	0.064
010755	0 2 0.00	0.0022	0.99	0.064
010756	0 2 0.00	0.0022	0.99	0.064
010757	0 2 0.00	0.0022	0.99	0.064
010758	0 2 0.00	0.0022	0.99	0.064

010759 0 2 0.00 0.0022 0.99 0.064
 010760 0 2 0.00 0.0022 0.99 0.064
 010761 0 2 0.00 0.0022 0.99 0.064
 010762 0 2 0.00 0.0022 0.99 0.064
 010763 0 2 0.00 0.0022 0.99 0.064
 010764 0 2 0.00 0.0022 0.99 0.064
 010765 0 2 0.00 0.0022 0.99 0.064
 010766 0 2 0.00 0.0022 0.99 0.064
 010767 0 2 0.00 0.0022 0.99 0.064
 010768 0 2 0.00 0.0022 0.99 0.064
 010769 0 2 0.00 0.0022 0.99 0.064
 010770 0 2 0.00 0.0022 0.99 0.064
 010771 0 2 0.00 0.0022 0.99 0.064
 010772 0 2 0.00 0.0022 0.99 0.064
 010773 0 2 0.00 0.0022 0.99 0.064
 010774 0 2 0.00 0.0022 0.99 0.064
 010775 0 2 0.00 0.0022 0.99 0.064
 010776 0 2 0.00 0.0022 0.99 0.064
 010777 0 2 0.00 0.0022 0.99 0.064
 010778 0 2 0.00 0.0022 0.99 0.064
 010779 0 2 0.00 0.0022 0.99 0.064
 010780 0 2 0.00 0.0022 0.99 0.064
 010781 0 2 0.00 0.0022 0.99 0.064
 010782 0 2 0.00 0.0022 0.99 0.064
 010783 0 2 0.00 0.0022 0.99 0.064
 0.00 1 0.00
 0.00 0.000 0.50

Soil Series: Adamsville sand; Hydrologic Group C

100.00	0	0	0						
0 0	0 0	0 0							
0.0	0.00	00.00							
3									
1 10.000	1.440	0.086	0.000	0.000	0.000				
.008	.008	0.000							
0.100	0.086	0.036	0.580	14.00					
2 10.000	1.440	0.086	0.000	0.000	0.000				
.008	.008	0.000							
1.000	0.086	0.036	0.580	14.00					
3 80.000	1.580	0.030	0.000	0.000	0.000				
.008	.008	0.000							
5.000	0.030	0.023	0.116	14.00					
0									
WATR	YEAR	10	PEST	YEAR	10	CONC	YEAR	10	1
6									
11	-----								
1	DAY								
RUNF	TSER	0 0	1.E0						

OUTPUT FILE

WATER COLUMN DISSOLVED CONCENTRATION (PPB)

YEAR	PEAK	96 HOUR	21 DAY	60 DAY	90 DAY	YEARLY
1948	0.020	0.018	0.014	0.009	0.009	0.003
1949	0.011	0.010	0.008	0.006	0.005	0.001
1950	0.020	0.018	0.014	0.009	0.007	0.002
1951	0.060	0.053	0.034	0.017	0.012	0.004
1952	0.101	0.089	0.055	0.027	0.019	0.006
1953	0.026	0.023	0.019	0.013	0.010	0.003
1954	0.048	0.042	0.029	0.015	0.011	0.003
1955	0.019	0.017	0.011	0.007	0.006	0.002
1956	0.022	0.020	0.014	0.009	0.007	0.002
1957	0.064	0.056	0.043	0.026	0.019	0.005
1958	0.024	0.021	0.014	0.008	0.006	0.002
1959	0.028	0.025	0.018	0.012	0.010	0.003
1960	0.035	0.031	0.023	0.014	0.012	0.004
1961	0.013	0.011	0.008	0.005	0.004	0.001
1962	0.019	0.017	0.012	0.008	0.007	0.002
1963	0.022	0.020	0.016	0.010	0.008	0.002
1964	0.047	0.042	0.028	0.016	0.012	0.004
1965	0.018	0.016	0.012	0.009	0.008	0.003
1966	0.012	0.011	0.009	0.006	0.005	0.002
1967	0.033	0.029	0.018	0.014	0.011	0.003
1968	0.018	0.016	0.012	0.009	0.007	0.002
1969	0.031	0.027	0.017	0.013	0.010	0.003
1970	0.013	0.012	0.009	0.005	0.004	0.001
1971	0.013	0.011	0.007	0.005	0.005	0.002
1972	0.037	0.033	0.022	0.013	0.010	0.003
1973	0.012	0.010	0.009	0.007	0.006	0.002
1974	0.016	0.014	0.012	0.007	0.005	0.002
1975	0.022	0.019	0.012	0.007	0.005	0.002
1976	0.023	0.021	0.014	0.009	0.008	0.002
1977	0.015	0.014	0.010	0.007	0.006	0.002
1978	0.003	0.002	0.002	0.001	0.001	0.001
1979	0.026	0.022	0.016	0.010	0.008	0.002
1980	0.030	0.026	0.019	0.013	0.009	0.003
1981	0.045	0.042	0.028	0.018	0.014	0.004
1982	0.005	0.005	0.004	0.003	0.002	0.001
1983	0.051	0.047	0.032	0.016	0.011	0.003

SORTED FOR PLOTTING

PROB	PEAK	96 HOUR	21 DAY	60 DAY	90 DAY	YEARLY
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0.027	0.101	0.089	0.055	0.027	0.019	0.006
0.054	0.064	0.056	0.043	0.026	0.019	0.005
0.081	0.060	0.053	0.034	0.018	0.014	0.004
0.108	0.051	0.047	0.032	0.017	0.012	0.004
0.135	0.048	0.042	0.029	0.016	0.012	0.004
0.162	0.047	0.042	0.028	0.016	0.012	0.004
0.189	0.045	0.042	0.028	0.015	0.011	0.003
0.216	0.037	0.033	0.023	0.014	0.011	0.003
0.243	0.035	0.031	0.022	0.014	0.011	0.003
0.270	0.033	0.029	0.019	0.013	0.010	0.003
0.297	0.031	0.027	0.019	0.013	0.010	0.003
0.324	0.030	0.026	0.018	0.013	0.010	0.003
0.351	0.028	0.025	0.018	0.013	0.010	0.003
0.378	0.026	0.023	0.017	0.012	0.009	0.003
0.405	0.026	0.022	0.016	0.010	0.009	0.003
0.432	0.024	0.021	0.016	0.010	0.008	0.003
0.459	0.023	0.021	0.014	0.009	0.008	0.002
0.486	0.022	0.020	0.014	0.009	0.008	0.002
0.514	0.022	0.020	0.014	0.009	0.008	0.002
0.541	0.022	0.019	0.014	0.009	0.007	0.002
0.568	0.020	0.018	0.014	0.009	0.007	0.002
0.595	0.020	0.018	0.012	0.009	0.007	0.002
0.622	0.019	0.017	0.012	0.008	0.007	0.002
0.649	0.019	0.017	0.012	0.008	0.006	0.002
0.676	0.018	0.016	0.012	0.007	0.006	0.002
0.703	0.018	0.016	0.012	0.007	0.006	0.002
0.730	0.016	0.014	0.011	0.007	0.006	0.002
0.757	0.015	0.014	0.010	0.007	0.005	0.002
0.784	0.013	0.012	0.009	0.007	0.005	0.002
0.811	0.013	0.011	0.009	0.006	0.005	0.002
0.838	0.013	0.011	0.009	0.006	0.005	0.002
0.865	0.012	0.011	0.008	0.005	0.005	0.001
0.892	0.012	0.010	0.008	0.005	0.004	0.001
0.919	0.011	0.010	0.007	0.005	0.004	0.001
0.946	0.005	0.005	0.004	0.003	0.002	0.001
0.973	0.003	0.002	0.002	0.001	0.001	0.001
1/10	0.053	0.049	0.032	0.017	0.013	0.004

MEAN OF ANNUAL VALUES = 0.003

STANDARD DEVIATION OF ANNUAL VALUES = 0.001

UPPER 90% CONFIDENCE LIMIT ON MEAN = 0.003

mCPDMU

PRZM3.12 Input File, flcit.inp (Jan 28 2000)

Location: Osceola County, FL.; Crop: citrus; MLRA 156A

0.77	0.15	0	25.00	1	1				
4									
0.10	0.13	1.00	172.8			4	1.00	600.0	
1									
1	0.10	100.00	80.00	3	94	84	89	0.00	100.00
1	3								
0101 21 9 2209									
0.10 0.10 0.10									
.023 .023 .023									
36									
020148 030148 311248		1							
020149 030149 311249		1							
020150 030150 311250		1							
020151 030151 311251		1							
020152 030152 311252		1							
020153 030153 311253		1							
020154 030154 311254		1							
020155 030155 311255		1							
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020157 030157 311257		1							
020158 030158 311258		1							
020159 030159 311259		1							
020160 030160 311260		1							
020161 030161 311261		1							
020162 030162 311262		1							
020163 030163 311263		1							
020164 030164 311264		1							
020165 030165 311265		1							
020166 030166 311266		1							
020167 030167 311267		1							
020168 030168 311268		1							
020169 030169 311269		1							
020170 030170 311270		1							
020171 030171 311271		1							
020172 030172 311272		1							
020173 030173 311273		1							
020174 030174 311274		1							
020175 030175 311275		1							
020176 030176 311276		1							
020177 030177 311277		1							
020178 030178 311278		1							
020179 030179 311279		1							

020180	030180	311280		1
020181	030181	311281		1
020182	030182	311282		1
020183	030183	311283		1

Application: mCPDMU: One ground appl. @ 2.04 lb a.i./ac (2.28 Kg/h) @99% eff,
w/6.4%drift

36	1	0	0
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mCPDMU

010748	0	2	0.00	2.28	0.99	0.064
010749	0	2	0.00	2.28	0.99	0.064
010750	0	2	0.00	2.28	0.99	0.064
010751	0	2	0.00	2.28	0.99	0.064
010752	0	2	0.00	2.28	0.99	0.064
010753	0	2	0.00	2.28	0.99	0.064
010754	0	2	0.00	2.28	0.99	0.064
010755	0	2	0.00	2.28	0.99	0.064
010756	0	2	0.00	2.28	0.99	0.064
010757	0	2	0.00	2.28	0.99	0.064
010758	0	2	0.00	2.28	0.99	0.064
010759	0	2	0.00	2.28	0.99	0.064
010760	0	2	0.00	2.28	0.99	0.064
010761	0	2	0.00	2.28	0.99	0.064
010762	0	2	0.00	2.28	0.99	0.064
010763	0	2	0.00	2.28	0.99	0.064
010764	0	2	0.00	2.28	0.99	0.064
010765	0	2	0.00	2.28	0.99	0.064
010766	0	2	0.00	2.28	0.99	0.064
010767	0	2	0.00	2.28	0.99	0.064
010768	0	2	0.00	2.28	0.99	0.064
010769	0	2	0.00	2.28	0.99	0.064
010770	0	2	0.00	2.28	0.99	0.064
010771	0	2	0.00	2.28	0.99	0.064
010772	0	2	0.00	2.28	0.99	0.064
010773	0	2	0.00	2.28	0.99	0.064
010774	0	2	0.00	2.28	0.99	0.064
010775	0	2	0.00	2.28	0.99	0.064
010776	0	2	0.00	2.28	0.99	0.064
010777	0	2	0.00	2.28	0.99	0.064
010778	0	2	0.00	2.28	0.99	0.064
010779	0	2	0.00	2.28	0.99	0.064
010780	0	2	0.00	2.28	0.99	0.064
010781	0	2	0.00	2.28	0.99	0.064
010782	0	2	0.00	2.28	0.99	0.064
010783	0	2	0.00	2.28	0.99	0.064

0.00	1	0.00
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0.00	0.000	0.50
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Soil Series: Adamsville sand; Hydrologic Group C

100.00	0	0	0
0	0	0	0
0.0	0.00	00.00	

1	10.000	1.440	0.086	0.000	0.000	0.000			
	.002	.002	0.000						
	0.100	0.086	0.036	0.580	14.00				
2	10.000	1.440	0.086	0.000	0.000	0.000			
	.002	.002	0.000						
	1.000	0.086	0.036	0.580	14.00				
3	80.000	1.580	0.030	0.000	0.000	0.000			
	.002	.002	0.000						
	5.000	0.030	0.023	0.116	14.00				
0									
WATR	YEAR	10	PEST	YEAR	10	CONC	YEAR	10	1
6									
11	-----								
1	DAY								
RUNF	TSER	0	0	1.E0					

OUTPUT FILE

WATER COLUMN DISSOLVED CONCENTRATION (PPB)

YEAR	PEAK	96 HOUR	21 DAY	60 DAY	90 DAY	YEARLY
----	----	-----	-----	-----	-----	-----
1948	32.350	31.270	28.580	26.250	25.600	10.820
1949	20.430	19.780	17.480	16.490	14.970	6.406
1950	30.210	29.200	26.920	24.990	22.810	9.550
1951	64.530	62.530	55.440	43.620	36.820	13.800
1952	101.000	97.580	85.300	66.550	56.590	21.830
1953	42.340	40.950	36.420	33.030	30.490	13.130
1954	53.770	51.970	48.960	38.780	34.920	13.490
1955	29.250	28.280	24.900	20.960	19.010	8.566
1956	34.720	33.720	30.750	25.410	21.720	8.536
1957	83.620	81.380	71.240	63.710	57.110	21.030
1958	28.420	27.790	25.390	21.560	20.230	8.797
1959	37.580	36.330	32.620	30.960	29.580	11.640
1960	59.290	57.380	53.630	43.530	36.820	14.270
1961	19.820	19.170	16.830	15.030	13.470	6.971
1962	31.500	30.450	28.390	23.710	20.470	8.866
1963	40.600	39.290	35.770	28.440	23.760	9.124
1964	69.330	67.030	58.670	47.210	41.530	15.710
1965	34.410	33.300	29.830	25.250	23.590	11.500
1966	25.380	24.540	21.700	18.560	16.350	7.429
1967	46.930	45.830	40.590	36.480	33.000	13.160
1968	33.720	32.610	30.210	24.360	22.080	9.560
1969	43.810	42.360	39.240	33.060	30.250	11.660
1970	25.170	24.360	21.530	16.640	14.080	6.370
1971	23.670	23.210	21.000	18.120	17.030	7.783

1972	43.930	42.870	39.050	34.580	31.170	11.470
1973	27.960	27.150	24.940	21.080	19.000	8.558
1974	30.230	29.220	26.450	21.250	18.500	7.341
1975	26.370	25.490	22.160	19.640	17.620	7.440
1976	39.500	38.450	34.010	27.280	23.660	10.120
1977	24.680	23.900	21.020	20.040	19.050	8.284
1978	7.142	6.964	6.320	5.438	5.252	3.313
1979	35.850	34.660	30.260	26.710	24.580	9.927
1980	40.150	39.140	36.000	34.330	30.380	11.950
1981	66.900	64.670	58.060	49.800	42.500	15.460
1982	13.060	12.680	11.770	9.561	9.106	5.719
1983	59.320	58.200	51.850	40.740	34.350	12.150

SORTED FOR PLOTTING

PROB	PEAK	96 HOUR	21 DAY	60 DAY	90 DAY	YEARLY
-----	-----	-----	-----	-----	-----	-----
0.027	101.000	97.580	85.300	66.550	57.110	21.830
0.054	83.620	81.380	71.240	63.710	56.590	21.030
0.081	69.330	67.030	58.670	49.800	42.500	15.710
0.108	66.900	64.670	58.060	47.210	41.530	15.460
0.135	64.530	62.530	55.440	43.620	36.820	14.270
0.162	59.320	58.200	53.630	43.530	36.820	13.800
0.189	59.290	57.380	51.850	40.740	34.920	13.490
0.216	53.770	51.970	48.960	38.780	34.350	13.160
0.243	46.930	45.830	40.590	36.480	33.000	13.130
0.270	43.930	42.870	39.240	34.580	31.170	12.150
0.297	43.810	42.360	39.050	34.330	30.490	11.950
0.324	42.340	40.950	36.420	33.060	30.380	11.660
0.351	40.600	39.290	36.000	33.030	30.250	11.640
0.378	40.150	39.140	35.770	30.960	29.580	11.500
0.405	39.500	38.450	34.010	28.440	25.600	11.470
0.432	37.580	36.330	32.620	27.280	24.580	10.820
0.459	35.850	34.660	30.750	26.710	23.760	10.120
0.486	34.720	33.720	30.260	26.250	23.660	9.927
0.514	34.410	33.300	30.210	25.410	23.590	9.560
0.541	33.720	32.610	29.830	25.250	22.810	9.550
0.568	32.350	31.270	28.580	24.990	22.080	9.124
0.595	31.500	30.450	28.390	24.360	21.720	8.866
0.622	30.230	29.220	26.920	23.710	20.470	8.797
0.649	30.210	29.200	26.450	21.560	20.230	8.566
0.676	29.250	28.280	25.390	21.250	19.050	8.558
0.703	28.420	27.790	24.940	21.080	19.010	8.536
0.730	27.960	27.150	24.900	20.960	19.000	8.284
0.757	26.370	25.490	22.160	20.040	18.500	7.783
0.784	25.380	24.540	21.700	19.640	17.620	7.440
0.811	25.170	24.360	21.530	18.560	17.030	7.429
0.838	24.680	23.900	21.020	18.120	16.350	7.341
0.865	23.670	23.210	21.000	16.640	14.970	6.971

0.892	20.430	19.780	17.480	16.490	14.080	6.406
0.919	19.820	19.170	16.830	15.030	13.470	6.370
0.946	13.060	12.680	11.770	9.561	9.106	5.719
0.973	7.142	6.964	6.320	5.438	5.252	3.313
1/10	67.629	65.378	58.243	47.987	41.821	15.535

MEAN OF ANNUAL VALUES = 10.604

STANDARD DEVIATION OF ANNUAL VALUES = 3.895

UPPER 90% CONFIDENCE LIMIT ON MEAN = 11.565

APPENDIX II

SCI-GROW

OUTPUT FILES FOR MODELING DIURON AND ITS DEGRADATES

RUN No. 1 FOR diuron

INPUT VALUES

APPL (#/AC) RATE	APPL. NO. (#/AC/YR)	URATE KOC	SOIL	SOIL METABOLISM (DAYS)	AEROBIC
---------------------	------------------------	--------------	------	---------------------------	---------

9.600 1 9.600 468.0 372.0

GROUND-WATER SCREENING CONCENTRATIONS IN PPB

6.521987

A= 367.000 B= 473.000 C= 2.565 D= 2.675
RILP= 3.399
F= -.168 G= .679 URATE= 9.600 GWSC=
6.521987

RUN No. 1 FOR DCPMU

INPUT VALUES

APPL (#/AC) APPL. URATE SOIL SOIL AEROBIC
RATE NO. (#/AC/YR) KOC METABOLISM (DAYS)

2.030 1 2.030 468.0 770.0

GROUND-WATER SCREENING CONCENTRATIONS IN PPB

2.497237

A= 765.000 B= 473.000 C= 2.884 D= 2.675
RILP= 3.821
F= .090 G= 1.230 URATE= 2.030 GWSC=
2.497237

RUN No. 2 FOR DCPU

INPUT VALUES

APPL (#/AC) APPL. URATE SOIL SOIL AEROBIC
RATE NO. (#/AC/YR) KOC METABOLISM (DAYS)

.080 1 .080 468.0 770.0

GROUND-WATER SCREENING CONCENTRATIONS IN PPB

.098413

A= 765.000 B= 473.000 C= 2.884 D= 2.675
RILP= 3.821
F= .090 G= 1.230 URATE= .080 GWSC=
.098413

RUN No. 3 FOR 3,4-DCA INPUT VALUES

APPL (#/AC) APPL. URATE SOIL SOIL AEROBIC
RATE NO. (#/AC/YR) KOC METABOLISM (DAYS)

.002 1 .002 468.0 30.0

GROUND-WATER SCREENING CONCENTRATIONS IN PPB

.000155

A= 25.000 B= 473.000 C= 1.398 D= 2.675
RILP= 1.852
F= -1.111 G= .077 URATE= .002 GWSC=
.000155

RUN No. 4 FOR mCPDMU

INPUT VALUES

APPL (#/AC) APPL. URATE SOIL SOIL AEROBIC
RATE NO. (#/AC/YR) KOC METABOLISM (DAYS)

1.120 1 1.120 468.0 115.0

GROUND-WATER SCREENING CONCENTRATIONS IN PPB

.287307

A= 110.000 B= 473.000 C= 2.041 D= 2.675
RILP= 2.705
F= -.591 G= .257 URATE= 1.120 GWSC=
.287307

14. Cullington, J.E., and A. Walker. 1998. Rapid degradation of diuron, and other phenylurea herbicides by a soil bacterium. *Soil Biology and Biochemistry*. 31:677-686.
- 15.
9. Rouchaud J., O. Neus, R. Bulcke, K. Cools, H. Eelen, and T. Dekkers. 2000. Soil dissipation of diuron, chlorotoluron, simazine, propyzamide, and diflufenican herbicides after repeated applications in fruit tree orchards. *Archives of Environmental Contamination and Toxicology*. 39(1):60-65.
10. Linuron Reregistration Eligibility Decision. 1994. United States Environmental Protection Agency , Office of Prevention, Pesticides And Toxic Substances, [Online] at <http://www.epa.gov/opprrd1/REDs/0047.pdf>.

Diuron Surface Water Monitoring Data

Location	Duration of Sampling (sampling frequency)	Number of samples (% detections)	Max detection (ppb)

CA (mostly creeks and rivers) ¹	Nov. 1996-April 1998 for most samples (sampling every 2 weeks)	307 (48 %)	30.6
CA (runoff studies from right of way use-edge of plot data) ²	September 1991-November 1991 (sampling during runoff events)	47 (100 %)	2849 (of three studies)
LA (mostly creeks, bayous and rivers) ³	May 1999-May 2000 (sampling every 2 weeks to one month)	83 (70 %)	3.65 (estimated) 0.48 (confirmed)
MS, MO, TN, AR, and North LA (mostly creeks, bayous and rivers) ⁴	February 1996-February 2001 (sampling every 2 weeks to one month)	219 (52 %)	2.1 (estimated) 0.98 (confirmed)

¹ CA Department of Pesticide Regulation's surface water database, as of July 15, 2000

SWDB study 37. Nordmark, Craig. 1998. Preliminary results of acute and chronic toxicity testing of surface water monitored in the Sacramento River watershed, winter 1997-98. Memorandum to Don Weaver, Environmental Monitoring and Pest Management, Department of Pesticide Regulation, Sacramento, California. July 31, 1998.

SWDB study 41. Domagalski, J., In Prep. Pesticide monitoring in the Sacramento River Basin, California, 2/96-9/98. USGS National Water-Quality Assessment Program. USGS report in preparation.

SWDB study 43. Foe, C. 1993. Pesticides in surface water from applications on orchards and alfalfa during the winter and spring of 1991-92. Central Valley Regional Water Quality Control Board, Sacramento, California. February 1993.

SWDB study 51. Sacramento Area Stormwater NPDES Permit Monitoring Program: 1990, 1991, 1992, 1994-95 and 1995-96. Submitted to County of Sacramento and cities of Sacramento, Folsom and Galt by Larry Walker and Associates, Davis California.

SWDB study 57. Nordmark, Craig. 1999. Preliminary results of acute and chronic toxicity
testing of surface water monitored in the Sacramento River watershed, winter
1998-99.
Memorandum to Don Weaver, Environmental Monitoring and Pest Management,
Department of
Pesticide Regulation, Sacramento, California. May 26, 1999.

SWDB study 63. Nordmark, Craig. In prep. Preliminary results of acute and chronic toxicity
testing of surface water monitored in the Sacramento River watershed, winter
1999-00.
Memorandum to Don Weaver, Environmental Monitoring and Pest Management,
Department of
Pesticide Regulation, Sacramento, California.

² Powell, S., R. Neal, and J. Leyva. 1996. Runoff and Leaching of Simazine and Diuron used on Highway Rights of Way. CAL DPR Report No. EH 96-03, www.cdpr.ca.ca.gov/empm/pubs/chapreps/e9603.htm.

³ Walters, D. 2001. USGS Spreadsheet "Breithaupt.xls" sent to James Breithaupt of OPP/EFED on 5/23/2001 in Response to Data Request.

⁴ Coupe, Richard H. 2001. USGS Spreadsheet "EPA.xls" sent to James Breithaupt of OPP/EFED on 4/12/2001 in Response to Data Request.

⁵ Harris, Jennifer. 2001. USGS Spreadsheet "DCA.xls" sent to James Breithaupt of OPP/EFED on 5/21/2001 in Response to Data Request.

Discussion of the Surface Water Monitoring Results for the Common Diuron, Linuron, and Propanil Degradate 3,4-Dichloroaniline (3,4-DCA)

Diuron, linuron, and propanil have a common degradate, 3,4-DCA. In MS, MO, TN, AR, and North LA, 3,4-DCA did not exceed 8.9 ppb in surface water (49 % detection rate, 68 samples) (Harris, 2001). In South Louisiana, there were only three samples for 3,4-DCA, with a maximum concentration of 0.06 ppb (Walters, 2001). Any DCA present in MS, MO, TN, AR, and North LA is likely to be a result of both diuron and propanil applications due to both cotton and rice being produced. In South Louisiana, any 3,4-DCA present would most likely be from applied propanil to rice.